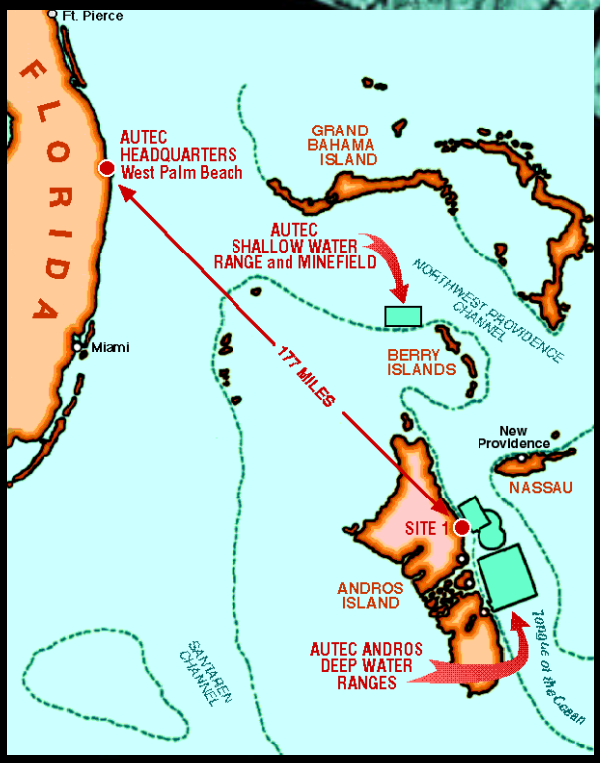
The Test and Training Range of Choice...

THE ATLANTIC UNDERSEA TEST AND EVALUATION CENTER

AUTEC

The Navy's most versatile in-water range…



…maintaining U.S. superiority for over 30 years.

WHAT IS AUTEC?

AUTEC, the Atlantic Undersea Test and Evaluation Center, is a comprehensive undersea warfare systems test complex. Located at Andros Island in the Bahamas, AUTEC has been the Navy's East Coast in-water range of choice for over 30 years. Organizationally, AUTEC is a detachment of the Naval Undersea Warfare Center Division, Newport, with administrative and logistics support offices in Newport, Rhode Island, and West Palm Beach, Florida.

The AUTEC ranges provide high-precision test facilities to gather accurate positional data. Such data is used to analyze and assess the performance of undersea warfare weapons, combat systems, and other sensor systems. The AUTEC ranges encompass both deep and shallow water environments, all of which provide instrumented three-dimensional, in-water, and in-air tracking of multiple platforms, weapons, and other objects. These capabilities make the AUTEC ranges ideally suitable to support training exercises for submarines, ships, and aircraft, as well as for RDT&E decision-point testing.

In addition to the in-water, in-air, and sensor calibration ranges, AUTEC supports land-based test and training operations at both the main base facility and at its remote, downrange sites.

AUTEC is a full-service test facility providing complete test planning and management services, including integration of cooperative test and training exercises. AUTEC's data processing, analysis support, and resulting data products can be tailored to any specific test or training program. Logistics requirements are supported from West Palm Beach and Cape Canaveral, Florida. Technical, nontechnical, and housing support is available at AUTEC's main base on Andros Island. AUTEC's facilities are available for use by U.S. and allied foreign government organizations, private industry, and academic institutions.

TYPICAL PROGRAMS

AUTEC's diverse capabilities are evidenced by the many types of programs it supports:

- Oceanographic Research Systems Development Tests
- Research and Development Testing of Advanced Undersea Warfare Combat Systems
- Ship Performance and Maneuvering Standardization Trials
- Sea and Air-Launched Undersea Weapon Evaluations
- Unmanned Vehicle, Weapon, Surface Ship, and Submarine Acoustic Measurements and Performance Evaluations
- Fleet Readiness Test and Training Exercises, including:
  - Over-The-Horizon Targeting (OTH-T)
  - Miniwars
  - Mk 48/ADCAP Proficiencies and Training Certification Programs
  - Aircraft-Launched Torpedo Exercises
  - Joint Special Warfare Training
- Range Instrumentation Development Tests
- Surface Ship, Submarine, and Aircraft Sensor Performance and Calibration Tests
- Nonacoustic Sensor Tests
- Mine Warfare Tests
- Land-Based Exercises and Situational Training

SERVICES AVAILABLE

AUTEC provides a full range of technical services and infrastructure to support customers, from pre-test operations planning to post-test data analysis, including:

- Single POC for Test Planning, Coordination, and Fleet Liaison
- Air Support Services
- Test Conduct/Execution
- Weapon/Target/Instrumentation Support Services
- Data Acquisition/Processing/Analysis
- Engineering/Fabrication Support Services
- Marine and Aircraft Support Services
- Logistic and Supply Services

An ideal year-round test facility…

…supporting major air, surface, and underwater systems.

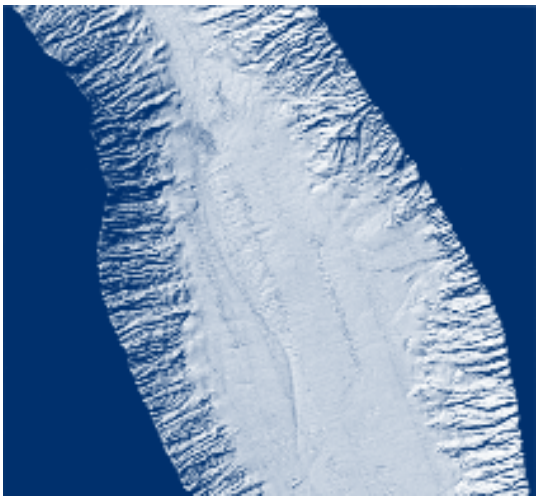
AUTEC ENVIRONMENT

AUTEC's Bahamas location, with its semi-tropical climate, quiet acoustic environment, lack of commercial encroachment, and extensive capabilities, is an ideal year-round test facility. AUTEC is located on Andros Island because of its close proximity to the Tongue of the Ocean (TOTO), a unique, deep water basin, approximately 110 nautical miles (204 kilometers) long and 20 nautical miles (37 kilometers) wide, varying in depth from 4500–6000 feet (1.4–2 kilometers). The basin floor is relatively smooth and soft, with very gradual depth changes. TOTO is bounded on the west by Andros Island, on the south and east by large areas of very shallow banks that are non-navigable, and on the north by the Berry Islands. AUTEC's Shallow Water Range and Minefield is located on the southern boundary of the Northwest Providence Channel, adjacent to the Berry Islands. This area of gradually varying depths, ranging from 30-2000 feet (9–610 meters), is a prime location for littoral warfare test and training exercises. In addition to the Berry Islands, AUTEC offers other surrogate shallow water test sites off the east coast of Florida.

AUTEC's geography, low vessel traffic, protected environment, minimal shipping noise, slight currents, and absence of large ocean swells provides unsurpassed operational security and the required diversity necessary to support the Navy's "from the sea" mission.

ENVIRONMENTAL COMPLIANCE

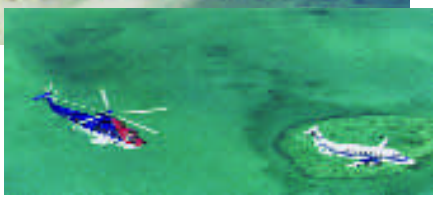
The Chief of Naval Operations (CNO) has approved typical operations conducted at the AUTEC ranges as being Environmentally Compliant with Navy Regulations. Similar test and training operations can be evaluated locally to determine whether they fall under the auspices of the AUTEC Environmental Review document as a CNO approved operation, or whether additional environmental documentation will be required. AUTEC can provide guidance and support to facilitate the development of any such additional environmental documentation. Operations historically conducted at the AUTEC ranges are described on the first page under Typical Programs. For additional information please contact our Test Program Management Office.



AUTEC RANGE ASSETS AND SERVICES

Our business is to provide a full spectrum of capabilities:

- Precision three-dimensional in-water and in-air tracking in both deep and shallow water range environments
- Precisely located targets for platform sensor accuracy testing
- A tracking system for deployed sonobuoys
- Differential GPS tracking systems for off-range tests, including a Large Area Tracking Range (LATR) system
- Ship-deployable systems for gathering radiated noise and acoustic signature data from torpedoes, unmanned vehicles, and other platforms



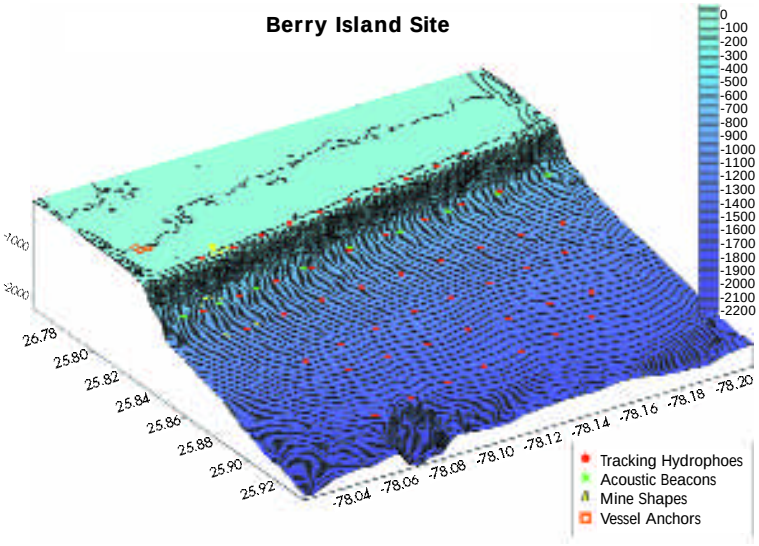
- Oceanographic and meteorological measurement and processing systems
- A buoyant vehicle, deep water haul down site with data collection capability
- Andros and West Palm Beach Real-Time Range Test Display Centers
- Remote and Portable Real-Time Range Display Systems and Software (PARGOS/PCARGOS)
- Extensive data reduction and data processing systems and facilities
- Computerized Mk 46 and Mk 48 torpedo simulators to minimize Fleet training costs
- Post-test debrief/replay display systems
- Open-ocean research vessels, range craft, and small boats
- Helicopters and fixed-wing aircraft
- Fixed, mobile, and deployable targets, noise sources, and transponders
- Exercise weapon and test vehicle post-run and turnaround capabilities
- Mk 46/Mk 50 REXTORP Intermediate Maintenance Activity (IMA) services
- Mk 48 Torpedo R&D Turnaround Facility
- Various Range User Buildings (RUBs), including a helicopter hangar, for customer use
- A Range User Support Compound with extensive technical laboratory facilities
- A large pier and wharf to accommodate vessels with up to a 20-foot (6-meter) draft

A state-of-the-art littoral range, plus much more…

…assuring the strength of the Fleet.

SHALLOW WATER RANGE AND MINEFIELD

With the growing need to operate, and to evaluate performance, in the shallow water environment, AUTEC has established a Shallow Water Range and Minefield 65 nautical miles (120 kilometers) north of its Main Base on Andros Island on the southern boundary of the Northwest Providence Channel. This well-surveyed OPAREA is equipped with autonomous underwater acoustic navigation beacons that provide safety and ground truth for submerged operations. It also encompasses a shallow water minefield, with a variety of both tethered and bottomed mines. A helo pad is conveniently located 8 nautical miles (15 kilometers) from the OPAREA on Great Stirrup Cay, the northernmost of the Berry Islands.



In-Water Tracking

The installed hydrophone tracking system provides in-water tracking data covering up to 90 square nautical miles (309 square kilometers) of the surveyed OPAREA. This system, called the Portable Tracking System (PTS), provides wide-area, high-accuracy, real-time track data for submarines, surface vessels, and all undersea vehicles and weapons. PTS is expandable to cover up to 200 square nautical miles, and a buoyed subset of the system can be deployed to any world-wide littoral area for operations in water depths of 100–2000 feet (30–610 meters).

In-Air Tracking

In-air tracking is provided by an airframe-certified and surface-ship-compatible Large Area Tracking Range (LATR) system. This system is capable of providing track data for up to 124 participants, to a range of 500 nautical miles (926 kilometers), from the surface to an elevation of 70,000 feet (21 kilometers). LATR in-air data can be merged with the in-water data to provide accurate, correlated, three-dimensional tracking coverage.

DEEP WATER RANGE

The deep water Weapons Range lies roughly parallel to the east coast of Andros Island. It is the largest and most versatile of the AUTEC ranges. It is capable of tracking up to 40 objects simultaneously. The range is supported by the Main Base (Site 1) and various smaller sites located to the south along the east coast of Andros Island. AN/WQC-2A Sonar Communications Sets provide underwater voice communications and mobile target and emergency command signal coverage, while HF, UHF, and VHF radio communications are available over the entire range.

In-Water Tracking

The in-water portion of the Weapons Range is divided into two instrumented sections located about 2 nautical miles (3.7 kilometers) apart. The larger section, located off Sites 3 and 4, consists of a rectangular array of hydrophones covering an area approximately 15 nautical miles (28 kilometers) wide by 20 nautical miles (37 kilometers) long. This section provides in-water tracking over an area of up to 280 square nautical miles (1020 square kilometers). The second section, located to the southeast of Site 1, provides a tracking area of about 120 square nautical miles (412 square kilometers). The two sections of the Weapons Range may be used either independently or simultaneously to support tests.

In-Air Tracking

In-air tracking is provided by radars and various other in-air tracking systems such as LATR, the Hyperbolic In-Air Tracking System (HITS), and DGPS. These in-air systems cover the AUTEC Weapons Range up to a distance of 500 nautical miles (926 kilometers) from Site 1 and a height of 70,000 feet (21 kilometers). Surveillance radars operate to support air and surface safety.

Sonobuoy Tracking System (STS)

STS allows tracking of standard configuration sonobuoys deployed by aircraft during ASW exercises on the Weapons Range. STS operates on any of the 99 standard sonobuoy frequencies and can track up to 40 sonobuoys at one time with an accuracy of 43 feet (13 meters). The position update rate per sonobuoy is approximately once every 30 seconds. The system measures phase angle differences of sonobuoy RF emissions from three sites on Andros Island. Bearing lines are converted to buoy positions which are displayed in the Site 1 Operations Control Room.

Superiority with precision measurements…

…and comprehensive test facilities and specialized targets.

NATO FORACS RANGE

The primary mission of AUTEC`s Naval Forces Sensor and Weapon Accuracy Checks Site (FORACS) Range is to perform precision measurements of the accuracy of target, surveillance, and navigation sensors installed on surface ships, submarines, and helicopters. AUTEC is affiliated with the NATO FORACS program and the eight participating NATO member nations: Canada, Denmark, Germany, Greece, Italy, Norway, the United Kingdom, and the United States.

Sensor Accuracy Tests may be conducted on operational Fleet units, if requested by the appropriate Type Commander, or as part of an RDT&E program for new or modified sensor systems.

The FORACS Range is located directly off Site 1 and covers an area 7 by 12 nautical miles (13 by 22 kilometers). It includes: active/passive sonar targets located in various water depths, active and passive radar targets, ESM/ECM and optical sensor targets. A control station ashore houses all target electronics.

The FORACS Range is used primarily to test

helicopter and surface-ship sensor systems. Submarine Sensor Accuracy Tests are normally conducted on the Weapons Range, where tests may be conducted at various keel depths, simulating actual conditions, and weapons can be launched and exercised.

Tracking

Tracking of test platforms on the FORACS Range is normally accomplished through the use of DGPS. Sensor targets are fixed at known locations. Sensors that can be tested include sonars, search radars, SINS/gyrocompasses, peloruses, gun and missile fire control radars and optical systems, and Electronic Support and Countermeasures (ESM/ECM) systems.

OCEAN HAUL DOWN FACILITY (OHDF)

In addition to its three major ranges, AUTEC has an Ocean Haul Down Facility (OHDF). The OHDF supports requirements for testing large-scale, high-speed, buoyant ascent vehicles in the study of drag reduction, self noise, radiated noise, and other hydrodynamic characteristics of underwater shapes. It can also be used to conduct static tests on submerged systems or targets, and to gather meteorological data including wind speed and direction, gust, air temperature, barometric pressure, rainfall, and relative humidity to predict oceanographic conditions.

TARGETS

A variety of fixed (FORACS), mobile, and deployable acoustic targets are available at AUTEC. Real-time, high-reliability target services are available to support surface ship, submarine, and aircraft weapon and sensor system RDT&E tests and Fleet training exercises.

Mobile Targets

The Target Mk 30 Mod 1 and the Expendable Mobile Acoustic Training Target (EMATT) are submarine simulators used on deep and shallow water ranges. These targets provide support for submarine warfare RDT&E projects and Fleet training exercises.

Deployable Targets

The Mobile Acoustic Response System (MARS) can be mounted on AUTEC's range craft to supplement Target Mk 30 Mod 1.

The Sonar Acoustic Target Source (SATS) Mk IV (AN/WQM-6) can be suspended at various depths from an AUTEC range craft. It offers an acoustic source for calibrating sonar systems and verifying their operation. A low-frequency transducer is available and can be deployed for special tests.

Other available targets include AN/SQQ-18A and AN/SQQ-46A sonar transponders, Mk 1 Mod 2 torpedo targets, and a hull-mountable Noise Augmentation System (NAS) for passive signature enhancement.


The best facilities and customer support services available…
…in the magnificent Caribbean environment.

MARINE CRAFT

The AUTEC fleet consists of a number of vessels ranging in size up to almost 200 feet (61 meters). These vessels are equipped for a variety of purposes, including:

- Open-ocean acoustic, environmental, and oceanographic research
- Torpedo and mobile target launch and recovery
- On-range test support and surveillance
- Logistics support between Andros Island and the Continental U.S. (CONUS)
- Transfer of personnel and equipment to and from the downrange sites and ships operating on the Andros Ranges.

AIRCRAFT

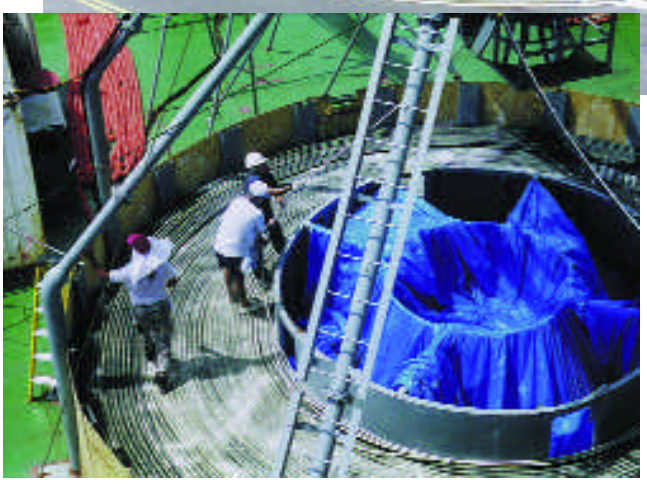
AUTEC provides both fixed- and rotary-winged aircraft to support range logistics and test operations.

Fixed-wing aircraft are available for transporting personnel and equipment between the AUTEC detachments in West Palm Beach, Florida, and Andros Island, Bahamas. Cargo flights can be arranged as needed.

Helicopters are equipped to provide mobile target launch and target and torpedo recovery services on the AUTEC ranges. These helicopters are available to act as airborne targets for tracking system tests and calibration, and for range surveillance, photographic, and other test- and training-related missions.

SHORE FACILITIES

The AUTEC Main Base on Andros Island is a nearly self-sufficient community. Resident housing is available along with transient quarters and messing facilities. Local transportation and off-island communication services are available on base. Off-duty activities are served by a chapel, cable television system, library, cocktail lounges, snack bar, retail store, and a variety of recreational facilities including an exercise room, tennis, basketball, racquetball and volleyball courts, softball field, fitness track, and a beach. Limited off-base amenities are available in the local area. Daily scheduled flights by AUTEC aircraft between West Palm Beach and the Andros Town Airport can be supplemented by commercial flights and special charters.



Come to AUTEC and become a Valued Customer...
We will show you why AUTEC is the
Undersea Range of Choice.

Getting to AUTEC

Traveling to AUTEC is convenient and hassle-free from AUTEC's air terminal located on the south side of the Palm Beach International Airport. There are up to four flights daily between West Palm Beach and Andros Island with a flight time of 45 minutes via one of AUTEC's fixed-wing aircraft.

To learn how AUTEC can help you with testing or training, contact:

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For Scheduling and Test Program Management, contact:

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AUTEC...for Measurable Results!